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SEVENTEEN NEW SPECIES OF AUSTRALIAN BUPRESTIDAE (INSECTA: COLEOPTERA) AND A HOST PLANT OF *CASTIARINA UPTONI* (Barker).

by S. BARKER*

Summary

BARKER, S. (1993) Seventeen new species of Australian Buprestidae (Insecta: Coleoptera) and a host plant of *Castiarina uptoni* (Barker). *Trans. R. Soc. S. Aust.* **117**(1), 15-26 4 June, 1993.

Sixteen new species of *Castiarina* are described: *C. aeruginosa* sp. nov., *C. antia* sp. nov., *C. anthrene* sp. nov. *C. chrysothoracica* sp. nov., *C. crucianella* sp. nov., *C. hasenpuschi* sp. nov., *C. indigesta* sp. nov., *C. luteofusca* sp. nov., *C. markhanloni* sp. nov., *C. melasma* sp. nov., *C. mimesis* sp. nov., *C. nebula* sp. nov., *C. rayclarkei* sp. nov., *C. tenebrosa* sp. nov., *C. woodi* sp. nov. and *C. xystra* sp. nov.; and one new species of *Themognatha*, *T. gordonburnsi* sp. nov. *Dicrastylis georgei* Munir is identified as a host plant of *C. uptoni* (Barker).

KEY WORDS: Coleoptera, Buprestidae, new species, *Castiarina*, *Themognatha*.

Introduction

The search for new species of Buprestidae occurring irregularly in isolated areas has been continued, with some success, by a group of dedicated amateur entomologists. Included in this new material are specimens of species rare in collections and some new species which are described herein as are some new species from older series which have been made available to me.

The major gap in knowledge of this family in Australia is information on their larval biology and food plants. *Castiarina uptoni* (Barker) occurs in very isolated arid areas of the country. The larval food plant of the population which occurs in the Ashburton River district in W.A. has been identified as *Dicrastylis georgei* Munir.

Gardner (1989a) in a generic revision of the tribe Stigmoderini pointed out that *Polychroma* Dejean held date priority over *Castiarina* LaPorte & Gory, but had not been used for over 130 years. She subsequently applied to the ICZN to have the name *Castiarina* conserved (Gardner 1989b) and that action has now been taken (Opinion 1628, Bull. Zool. Nomenel. 48 (1) March 1991, pp. 74-75).

Materials and Methods

Collection date and locality information listed for each specimen is a copy of all data written on each individual label. Male genitalia were prepared and displayed by the method described by Barker (1987) referred to in the text and if previously published, reference is given to the publication date. The specimens illustrated in all species but two are the holotype. Two allotypes are illustrated and the fact noted in the appropriate *remarks* section. Measurements given are mean total body length and width with standard error, except where there are insufficient specimens available to make the last calculation, when only mean is given. Acronyms used in the text for museum and private collections following the four letter system of Watt (1979) are: ANIC Australian National Insect Collection, Canberra; NMVA National Museum of Victoria, Melbourne; SAMA South Australian Museum, Adelaide; WAMA Western Australian Museum, Perth; RCBA Mr R. Clarke, Byron Bay; JHIQ Mr J. Hasenpusch, Innisfail; MHSA Mr T. M. S. Hanlon, Sydney; MPWA Mr M. Powell, Melville; RMNA Mr R. Mayo, Wallsend; ASSA, Mr A. Sundholm, Sydney; GWQA, Mr G. Wood, Atherton.

Castiarina crucianella sp. nov.

FIGS 1C, 2B

Holotype. ♂, 136 km NE Paynes Find, W.A., 31.ix.1984, Jones & Powell, WAMA.

Allotype. ♀, same data as holotype, WAMA.

Paratypes. W.A.: 2♂♂, 3♀♀, same data as holotype, SAMA, MPWA.

Colour. Head, antennae and pronotum blue-grey. Scutellum blue. Elytra orange with following blue markings: narrow basal margin; premedial fascia not reaching margin, reduced to elongate oblique mark in some specimens; post-medial fascia reaching margin; apical mark, all marks connected along suture. Ventral surface and legs blue. Hairs silver.

Shape and sculpture. Head closely punctured, median sulcus broad, muzzle short. Antennae, antennomeres: 1-3 obconic; 4-11 toothed. Pronotum closely punctured, narrow basal fovea extending forwards to middle as glabrous line, basal notches represented by glabrous area on each side more marginal than medial; apical margin straight, basal margin bisinuate; laterally parallel-sided at base, rounded to widest pre-medially, rounded and narrowed to apex. Scutellum scutiform, glabrous, excavate. Elytra punctate-striate, intervals convex, smooth, laterally angled out from base, rounded at humeral callus, medially concave, rounded post-medially and narrowed to bispinose apex; sharp

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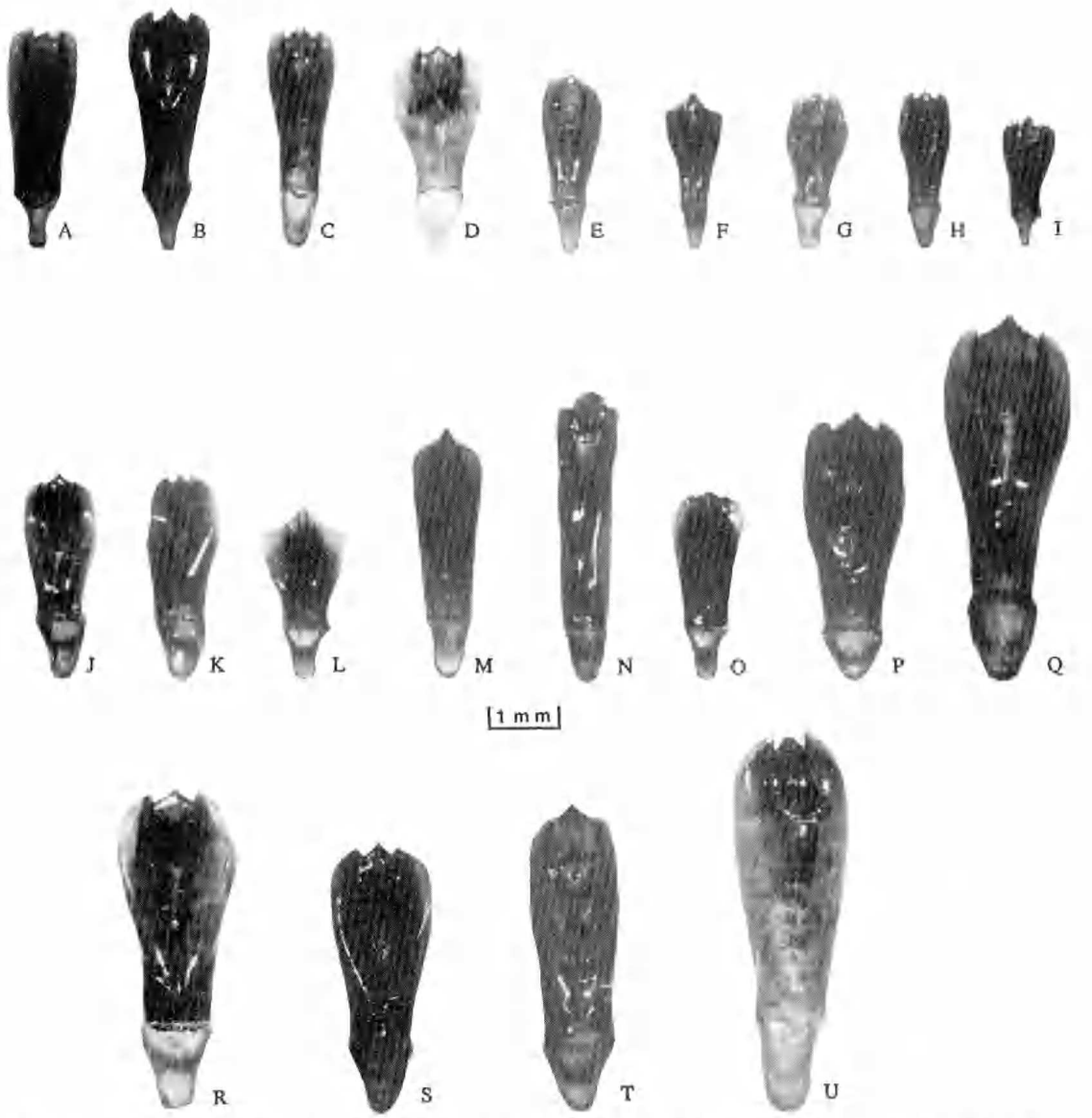

Fig. 1. Photomicrographs of male genitalia of the following *Castiarina* spp.: A. *C. militaris* (Carter); B. *C. xystra* sp.nov.; C. *C. crucianella* sp.nov.; D. *C. aeruginosa* sp.nov.; E. *C. sanguinolenta* (C & G); F. *C. mimesis* sp.nov.; G. *C. inconspicua* (Saunders); H. *C. markhanloni* sp.nov.; I. *C. antia* sp.nov.; J. *C. guttifera* (Obenberger); K. *C. tenebrosa* sp.nov.; L. *C. hasenpuschi* sp.nov.; M. *C. luteofusca* sp.nov.; N. *C. woodi* sp.nov.; O. *C. nebula* sp.nov.; P. *C. analis* (Saunders); Q. *C. indigesta* sp.nov.; R. *C. rollei* (Kerremans); S. *C. rayclarkei* sp.nov.; T. *C. chrysothoracica* sp.nov. and *Themognatha*: U. *T. gordonburnsi* sp.nov.

marginal spine, smaller sutural spine, margin rounded and indented between spines, apices diverging slightly. Ventral surface with shallow punctures, hairy, hairs medium length, edges of abdominal segments glabrous. S7: truncate, medially indented in both sexes. Size. Males, 4.7 × 13.1 mm (3). Females 5.2 × 13.4 mm (4).

Male genitalia. (Fig. 1C) Parameres diverging from basal piece, more so post-medially, rounded to apex. Median lobe pointed, sides obtusely angled away. Apophysis of basal piece medium width, rounded apically.

Remarks. Resembles *C. crux* (Saunders) and *C. nota* Barker. Differs from those species by being larger, with bright blue markings and different male genitalia (Barker 1990: Figs 1K, 1L). Name derived from *crux* L., cross.

Castiarina aeruginosa sp. nov.
FIGS 1D, 2A

Holotype. ♂, 17 km E Mt Carbine, Qld, 23.i.1991, J. Hasenpusch & S. Barker, SAMA I 21,241.
Allotype. ♀ Brumby Gulley, Mareeba-Kuranda Rd, Qld, 4.i.1981, S. Barker, SAMA I 21,242.
Paratypes. Qld: 1♂ 1♀, Mt Molloy, 26.xii.1985, A. Walford-Huggins, SAMA. W.A.: 1♂, 1♀, 12 km E Broome, 5.iv.1986, D. Knowles, MPWA.
Colour. Head coppery-green. Antennae purple. Pronotum and scutellum coppery-green. Elytra pale yellow with following green markings: narrow basal margin; variable post-medial spot at margin on each elytron; apical mark. Ventral surface: sternum coppery-green, abdomen pale yellow. Legs purple. Hairs silver.
Shape and sculpture. Head closely punctured, median sulcus broad, muzzle short. Antennae, antennomeres: 1-3 obconic; 4-11 toothed. Pronotum closely punctured laterally, less so medially, basal fovea, basal notches more marginal than medial; apical margin projecting medially, basal margin barely bisinuate; laterally angled inwards from base, rounded to widest pre-medially, rounded and narrowed to apex. Scutellum scutiform, glabrous, flat. Elytra punctate-striate, intervals convex, shallowly punctured; laterally angled out from base, rounded at humeral callus, medially concave, rounded post-medially and narrowed to bispinose apex; small marginal spine, very small sutural spine, margin rounded and indented between spines, apices diverging slightly, apical margin subserrate. Ventral surface with shallow punctures moderately hairy, hairs short, edges of abdominal segments glabrous. S7: males truncate; females rounded, slightly indented medially.

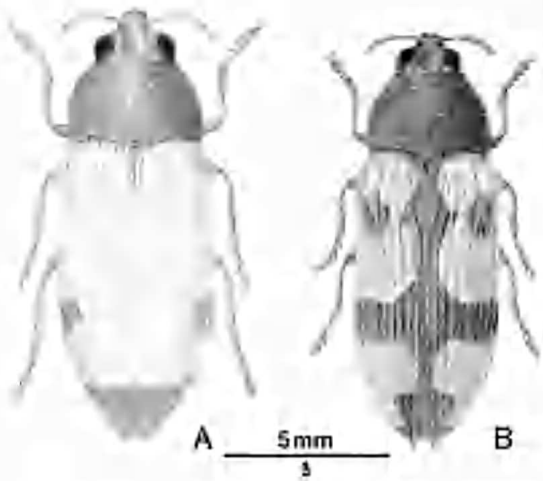

Fig. 2. Habitus illustrations of the following *Castiarina* species. A. *C. aeruginosa* sp.nov. holotype; B. *C. crucianella* sp.nov. holotype.

Size. Males, 4.3 × 11.2 mm (3). Females, 5.1 × 13.5 mm (3).
Male genitalia. (Fig. 1D). Short and broad. Parameres angled away from basal piece, more so post-medially, rounded to apex. Median lobe sharp, sides obtusely angled away. Apophysis of basal piece medium width, rounded at apex.

Remarks. This species resembles *C. straminea* (Saunders) but distinguished by greenish reflections of coppery markings and is smaller species, male genitalia differ (Barker 1986: Fig. 2N) and has northern distribution in Qld and W.A., *C. straminea* occurs in central and southern Qld and northern N.S.W. Name derived from *aerugo* L., verdigris.

Castiarina chrysothoracica sp. nov.
FIGS 1T, 4B

Holotype. ♂, Mt Carbine, Qld, 15.i.1991, R. Clarke, SAMA I 21,243.
Allotype. ♀, same data as holotype, SAMA I 21,244.
Paratypes. Qld: 2♀♀, Mt Carbine, 8.i.1992, R. Clarke, RCBA; 1♂, Mt Garnet, 9.i.1992, R. Clarke, MHSA; 1♂, same data as holotype, RCBA; 2♂♂, Mt Carbine, 16.i.1991, R. Clarke, RCBA; 1♂, Mt Carbine, 8.i.1992, R. Clarke, RMNA.
Colour. Head and antennae green with yellow reflections. Pronotum green with golden reflections. Scutellum green with yellow reflections. Elytra yellow with the following markings: blue-green narrow basal margin and medial V-shaped mark surrounding scutellum; blue post-medial fascia reaching margin; blue apical mark, last two marks narrowly connected along suture. Ventral surface: sterum green with yellow reflections; male abdomen testaceous; female abdomen green except apex S7 testaceous. Legs green. Hairs silver.
Shape and sculpture. Head closely punctured, median sulcus broad, muzzle short. Antennae, antennomeres: 1-3 obconic; 4-11 toothed. Pronotum closely punctured, narrow basal fovea extending forwards to middle as glabrous line, basal notches more marginal than medial; apical margin slightly projecting medially, basal margin almost straight; laterally angled outwards from base, rounded pre-medially, tapered to apex. Scutellum scutiform, glabrous, excavate. Elytra punctate-striate, intervals convex, punctured; laterally angled out from base, rounded at humeral callus, medially concave, rounded post-medially and narrowed to bispinose apex; sharp marginal spine, smaller sutural spine, margin rounded and indented between spines, apices diverging, apical margin subserrate. Ventral surface with shallow punctures, moderately hairy, hairs short, edges of abdominal segments glabrous. S7: rounded in both sexes.
Size. Males, 14.3 ± 0.24 × 5.5 ± 0.12 mm (6). Females, 13.5 × 5.1 mm (3).

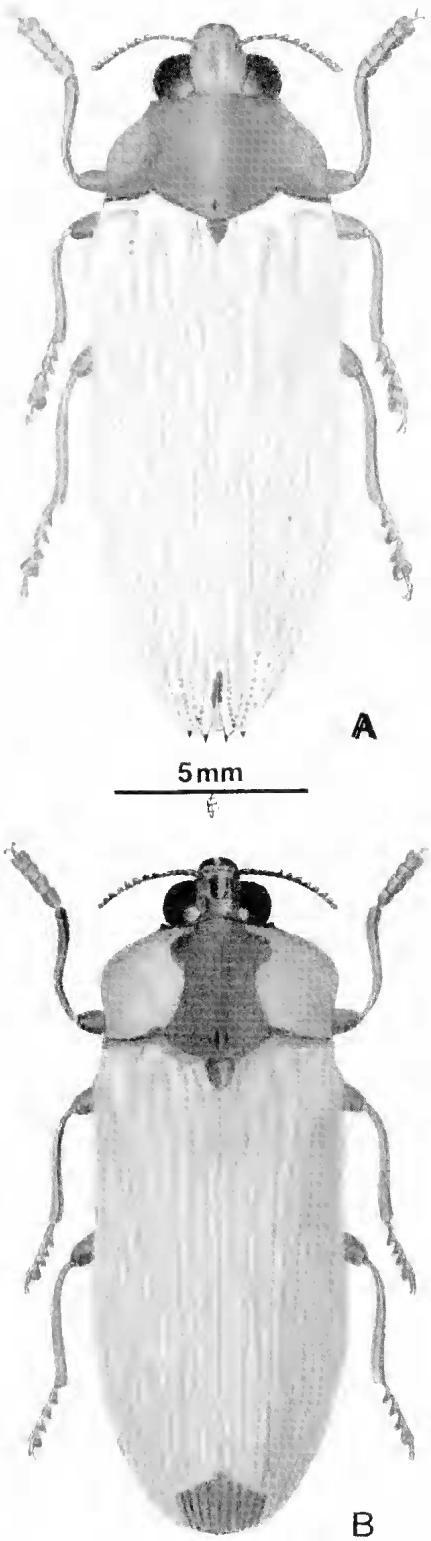

Fig. 3. Habitus illustrations of the following *Castiarina* species: A. *C. rayclarkei* sp.nov. holotype; B. *C. indigesta* sp.nov. holotype.

Male genitalia. (Fig. 1T) Parameres slightly angled outwards from basal piece, slightly rounded medially, rounded at apex. Median lobe sharp, sides obtusely angled away. Apophysis of basal piece short and broad, rounded apically.

Remarks. Colour and pattern of male resemble those of *C. garnettensis* (Barker) but that species has spineless apex and male genitalia are different (Barker 1989: Fig. 1G). Name derived from *chrysos* Gr., gold and *thorax* Gr., chest.

Castiarina melasma sp. nov.
FIG. 4D

Holotype. ♀, Milmerran, Qld, 1.xii.1990, R. Clarke, SAMA I 21,245.
Paratypes. Qld: 2♀♀, Milmerran, 7.xii.1990, R. Clarke, RCBA.
Colour. Head, antennae, pronotum and scutellum green with yellow reflections. Elytra yellow with black apical mark. Ventral surface and legs green. Hairs silver.
Shape and sculpture. Head closely punctured, median sulcus narrow, muzzle short. Antennae, antennomeres: 1-3 obconic; 4-11 toothed. Pronotum closely punctured, basal fovea extending to middle as impressed line, basal notches on each side more marginal than medial; apical margin projecting medially, basal margin barely bisinuate; laterally parallel-sided at base, angled inwards then rounded to widest pre-medially, rounded and narrowed to apex. Scutellum narrow, scutiform, glabrous, excavate. Elytra punctate-striate, intervals convex, flat, punctured; laterally angled outwards from base, rounded at humeral callus, medially concave, rounded post-medially and narrowed to bispinose apex; small, sharp marginal spine, very small sutural spine, margin rounded and indented between spines, apices hardly diverging, apical margin subserrate. Ventral surface with shallow punctures, moderately hairy, sternal hairs medium length, abdominal hairs very short, edges of abdominal segments glabrous. S7: male unknown; female truncate and indented medially.
Size. Females, 13.7 × 5.3 mm (3).

Remarks. Structure, colour and pattern distinct. Name derived from *melasma* Gr., a black spot.

Castiarina indigesta sp. nov.
FIGS 1Q, 3B

Holotype. ♂, Kuranda, Qld, 2.ii.1992, J. Hasenpusch, SAMA I 21,246.
Allotype. ♀, Davies Creek, Mareeba, Qld, 18.i.1991, S. Barker, SAMA I 21,247.
Paratypes. Qld: 2♂♂, 1♀, Kuranda, i.1948, G. Brooks, ANIC; 5♂♂, 1♀, Kuranda, F. P. Dodd, SAMA; 1♂, Kuranda, 10.i.1980, G. Wood, RMNA; 1♀, Mt Molloy, ii.1987, G. Wood, RMNA; 1♂, Mt

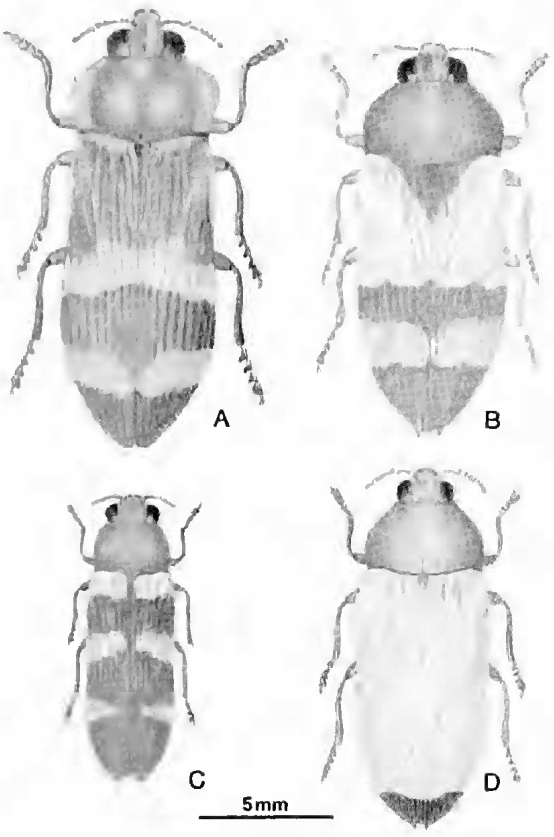

Fig. 4. Habitus illustrations of the following *Castiarina* species: A. *C. xystra* sp.nov. holotype; B. *C. chrysothoracica* sp.nov. holotype; C. *C. antia* sp.nov. allotype; D. *C. melasma* sp.nov. holotype.

Garnet, 19.i.1989, S. Lamond, MHSA; 1♂, Herberton, i.1989, S. Lamond, MHSA; 2♂♂, 1♀, Mt Garnet, 13.i.1991, R. Clarke, RCBA; 1♂, 1♀, Mt Garnet, 7.i.1992, J. Hasenpusch, JHIA; 1♂, 1♀, Mt Garnet, 9.i.1992, R. Clarke, RMNA; 1♂, 1♀, Mt Garnet, 10.i.1992, R. Clarke, RCBA; 1♂, 1♀, Mt Garnet, 10.i.1992, R. Clarke, MHSA; 1♂, Davies Creek, 18.i.1992, J. Hasenpusch, JHIA; 1♂, Kuranda, 22.i.1992, J. Hasenpusch, JHIA; 1♀, Windsor Tableland, 2.iii.1992, J. Hasenpusch, JHIA.

Colour. Head black with blue reflections. Antennae blue-green. Pronotum black medially (narrowly at apex, broadly at base) laterally red-brown. Scutellum black. Elytra reddish-brown with following markings: narrow dark blue basal margin; black sutural mark commencing medially, reaching apex expanded as black apical mark. Ventral surface and legs dark blue. Abdominal segments in some male specimens all brown. Hairs silver.

Shape and sculpture. Head closely punctured, median sulcus, muzzle short. Antennae, antennomeres: 1-3 obconic; 4-11 toothed. Pronotum shallowly punctured, deep basal fovea extending forwards to apical margin as glabrous impressed line, basal notches more marginal than medial; apical margin projecting medially, basal margin bisinuate; laterally angled outwards from base, rounded to widest part pre-medially, tapered to apex. Scutellum cordiform, few punctures, glabrous, flat. Elytra punctate-striate, intervals convex, wrinkled and punctured; laterally angled out from base, rounded at humeral callus, medially concave, rounded post-medially and narrowed to truncate spineless apex; apices diverging, apical margin subserrate. Ventral surface with shallow punctures, sparse short hair, edges of abdominal segments glabrous. S7 rounded in both sexes.

Size. Males, 16.8 ± 0.32 × 6.4 ± 0.10 mm (19). Females, 19.1 ± 0.26 × 7.6 ± 0.17 mm (10).

Male genitalia. (Fig, 1Q) Parameres slightly angled outwards from basal piece, rounded post-medially and narrowed to apex. Median lobe sharp, sides obtusely angled away. Apophysis of basal piece short, medium width, rounded apically.

Remarks. This species was confused with *C. analis* (Saunders) a smaller species occurring further south. *C. analis* has a prominent red margin around the elytra and pronotum, also their male genitalia are distinct (Fig, 1P) Name derived from *indigestus* L., confused.

Castiarina xystra sp. nov.
FIGS. 1B, 4A

Holotype. ♂, Black Mt, A.C.T., iii.1931, T. G., ANIC.

Colour. Head light blue apically, dark blue basally. Antennae blue-green. Pronotum dark blue medially, red laterally. Scutellum blue. Elytra red with following blue markings: narrow basal margin, medially expanded into large rounded mark; sinuate fascia covering humeral callus, thin red strip on each side separating last two marks; post-medial fascia expanded anteriorly and posteriorly along suture; apical mark. Ventral surface: sternum predominantly blue medially, presternum red laterally with blue spot each side close to margin, presternal process red, meso- and metasternum red medially; third coxae blue basally, red apically, abdomen predominantly red, bases of segents 5, 6, 7, 8 mainly blue. Legs blue. Hairs silver.

Shape and sculpture. Head closely punctured, median sulcus deep, muzzle short. Antennae, antennomeres: 1-3 obconic; 4-11 toothed. Pronotum closely punctured, basal fovea extending forwards to middle as impressed line, basal notches on each side more marginal than medial; apical margin projecting medially, basal margin almost straight; laterally angled outwards from base, rounded post-medially to apex. Scutellum cordiform, punctate, excavate. Elytra punctate-striate, intervals convex and punctured; laterally angled outwards from base, rounded at humeral callus,

medially concave, rounded post-medially and narrowed to spineless apex; apices hardly diverging. Ventral surface with shallow punctures, moderately hairy, hairs long on sternum, medium length on abdomen, edges of abdominal segments glabrous. S7: male truncate; female unknown.
Size. Male, 15.6 × 6.0 mm (1)
Male genitalia. (Fig. 1B) Parameres angled outwards from basal piece, rounded at apex. Median lobe sharp, sides acutely angled away. Apophysis of basal piece narrowed and rounded apically.

Remarks. The elytral pattern is similar to that found in *C. militaris* (Carter) but the basal colours differ being red in *C. xystra* and yellow in *C. militaris*. *C. xystra* is a larger species and male genitalia are different (Fig. 1A). Name derived from *xystra* L., scraper.

Castiarina rayclarkei sp. nov.
FIGS 1S, 3A

Holotype. ♂, Acacia Plateau, N.S.W., 16.i.1992, R. Clarke, SAMA I 21,248.
Allotype. ♀, Acacia Plateau, N.S.W., 17.i.1992, R. Clarke, SAMA I 21,249.
Paratypes. Qld: 1 ♀, Warwick, 26.i.1992, R. Clarke, MHSA. N.S.W.: 1 ♀, Acacia Plateau, 7.ii.1992, R. Clarke, RCBA.
Colour. Head and antennae bright green. Pronotum: bright green medially and along anterior margin and base; red laterally. Elytra yellow with following black markings with green reflections: narrow mark along suture from middle to apex covering both spines. Ventral surface and legs bright green. Hairs silver.
Shape and sculpture. Head shallowly punctured, glabrous, median sulcus, muzzle medium length. Antennae, antennomeres: 1-3 obconic; 4-11 toothed. Pronotum shallowly punctured, glabrous, basal fovea; apical margin projecting medially, basal margin bisinuate; laterally parallel-sided at base, rounded medially to apex. Fovea on each side at basal angles. Scutellum scutiform, glabrous, flat. Elytra punctate-striate, intervals convex and smooth; laterally angled outwards from base, rounded at humeral callus, medially parallel-sided, rounded post-medially and narrowed to bispinose apex; small marginal spine, larger sutural spine, apices diverging. Ventral surface with shallow punctures, sparse short hair, edges of abdominal segments glabrous. S7: rounded in both sexes.
Male genitalia. (Fig. 1S) Parameres angled outwards from basal piece, rounded near apex. Median lobe sharp, sides acutely angled away. Apophysis of basal piece medium width, rounded apically.
Size. Male, 18.4 × 6.7 mm (1). Females, 20.6 × 8.0 mm (3).

Remarks. This species shows morphological similarities to *C. rollei* (Kerremans). It differs in colour, size and male genitalia (Fig. 1R) from that species. Named after Mr R. Clarke, Byron Bay.

Castiarina antia sp. nov.
FIGS 1I, 4C

Holotype. ♂, Quairading, W.A., 23.xii.1991, M. Powell & D. Knowles, SAMA I 21,250.
Allotype. ♀, 38 km N Binnu, W.A., 13.xii.1988, M. Peterson, WAMA.
Colour. Head, antennae, pronotum, scutellum ventral surface and legs purple-bronze. Elytra yellow with following dark blue markings: holotype with narrow basal margin, pre-medial fascia represented by medial spot on each elytron (allotype has broad fascia reaching margin); broad post-medial fascia reaching margin; mark covering apex. Ventral surface and legs purple-bronze. Hairs silver.
Shape and sculpture. Head closely punctured, median sulcus broad, muzzle very short, hairy. Antennae compressed, antennomeres: 1-3 obconic; 4½-toothed; 5-10 toothed. Pronotum closely punctured, basal fovea extending forwards to middle as impressed line; apical margin projecting medially, basal margin bisinuate; laterally angled inwards from base, rounded to widest pre-medially, rounded to apex, laterally hairy. Scutellum scutiform, glabrous, flat. Elytra punctate-striate, intervals convex, punctured; laterally angled out from base, rounded at humeral callus, medially concave, rounded post-medially, rounded abruptly to bispinose apex; small blunt marginal spine, minute sutural spine, margin rounded and indented between spines, apices diverging; Ventral surface with shallow punctures, hairy, hairs long, edges of abdominal segments glabrous. S7: males truncate, medially indented; females rounded.
Male genitalia. (Fig. 1I) Short. Parameres parallel-sided at base, rounded outwards pre-medially, rounded to apex. Median lobe blunt, sides acutely angled away. Apophysis of basal piece narrow, rounded apically.
Size. Male, 3.3 × 10.2 mm (1). Female, 3.3 × 10.7 mm (1).

Remarks. Only *Castiarina* species that has reduced number of antennomeres. The specimen illustrated is the allotype (Fig. 4C), the first specimen collected. Name derived from *antia* L., forelock.

Castiarina anthrene sp. nov.
FIG. 6E

Holotype. ♀, 7 km W Nalbarra HS (28.39S, 117.36E), W.A., 29-30.viii.1981, T. F. Houston, WAMA.
Paratype. W.A.: 1 ♀, same data as holotype, SAMA.
Colour. Head, antennae black with blue reflections. Pronotum black medially, blue laterally. Scutellum

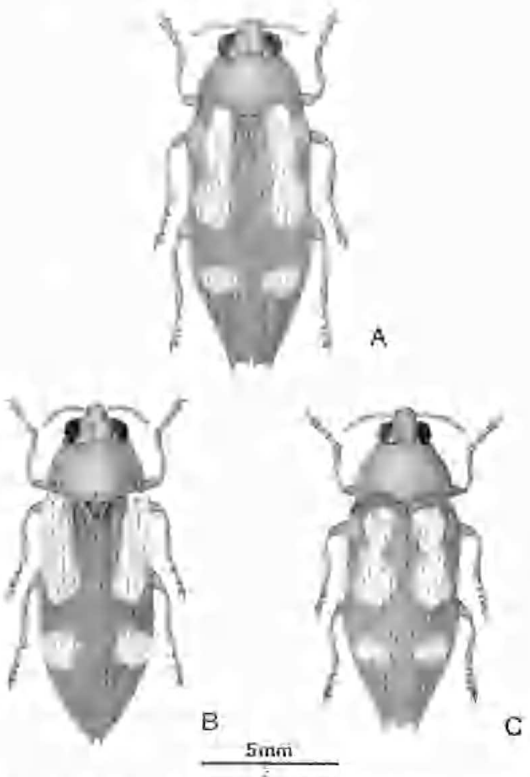

Fig. 5. Habitus illustrations of the following *Castiarina* species: A. *C. luteofusca* sp.nov. holotype; B. *C. woodi* sp.nov. holotype; C. *C. tenebrosa* sp.nov. holotype.

black. Elytra yellow with following black markings: narrow basal margin; pre-medial fascia not reaching margin anteriorly, extending to margin posteriorly; post-medial fascia reaching margin; apical mark, last three marks connected along suture. Ventral surface and legs dark blue. Hairs silver.

Shape and sculpture. Head closely punctured, median sulcus, very short muzzle. Antennae compressed, antennomeres: 1-3 obconic; 4½ toothed; 5-11 toothed. Pronotum closely punctured, basal fovea extending forwards to middle as glabrous line, basal notches represented by glabrous area on each side more marginal than medial, connected by glabrous posterior margin; apical margin projecting medially, basal margin almost straight; laterally parallel-sided at base, rounded to widest medially, rounded to apex. Scutellum scutiform, glabrous, excavate. Elytra costate, intervals 3, 5, 9 raised at basal half wrinkled and punctured; laterally angled out from base, rounded at humeral callus, medially concave, faintly rounded post-medially, tapered, rounded to bispinose apex; small sharp marginal and sutural spines, margin rounded and indented between, apices slightly diverging. Ventral surface with shallow punctures, moderately hairy, hairs long, edges of abdominal segments glabrous. S7: male unknown; females truncate, medially indented.
Size. Females, 11.0 × 3.6 mm (2).

Remarks. This is a very distinctive elongate species showing the typical modifications found in wasp/bee mimics. Name derived from *anthrene*, Gr., wasp.

Castiarina markhanloni sp. nov.
FIGS 1H, 6C

Holotype. ♂, Round Hill Reserve, N.S.W., 10.x.1992, T. M. S. Hanlon, SAMA I 21,251.
Allotype. ♀, same data as holotype, SAMA I 21,252.
Paratypes. N.S.W.: 13♂♂, 10♀♀, same data as holotype. MHSA.
Colour. Head, antennae, pronotum bronze-green with purple reflections. Scutellum purple. Elytra pale yellow with following dark blue markings with purple and blue reflections: narrow basal margin; pre-medial fascia ends expanded anteriorly over humeral callus and posteriorly touching margin; post-medial fascia touching margin; mark covering apex, all marks connected along suture. Ventral surface and legs purple-bronze with purple reflections. Hairs silver.
Shape and sculpture. Head closely punctured, shallow median sulcus, short muzzle. Antennae, antennomeres: 1-3 obconic; 4½ toothed; 5-11 toothed. Pronotum closely punctured, punctations small medially larger laterally, basal fovea extending forwards to middle as glabrous line then to apical margin as impressed line; apical margin projecting medially, basal margin bisinuate; laterally rounded from base, widest pre-medially, rounded to apex, laterally hairy. Scutellum small, scutiform, glabrous, flat. Elytra punctate-striate, intervals convex, wrinkled, punctured; laterally angled outwards from base, rounded at humeral callus, medially concave, rounded post-medially and narrowed to bispinose apex; small blunt marginal spine, sutural spine minute, margin in most specimens almost truncate and indented between spines, apices diverging. Ventral surface with shallow punctures, long dense hair, edges of abdominal segments glabrous. S7: truncate both sexes.
Size. Males, 9.7 ± 0.18 × 3.5 ± 0.05 mm (14). Females, 10.2 ± 0.22 × 3.9 ± 0.09 mm (11).
Male genitalia. (Fig. 1H) Short. Parameres parallel-sided from basal piece, angled outwards, pre-medially rounded then tapered, rounded at apex. Median lobe blunt, sides acutely angled away then widened. Apophysis of basal piece medium width, rounded apically.

Remarks. This species could be confused with *C. inconspicua* (Saunders). Main differences are the smaller scutellum and the strongly rounded pronotum. The male genitalia show some similarity in form

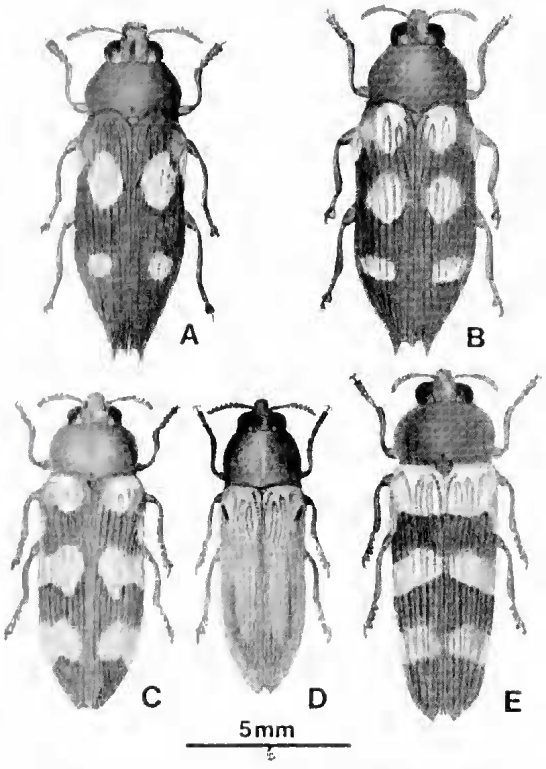

Fig. 6. Habitus illustrations of the following *Castiarina* species: A. *C. nebula* sp.nov. holotype; B. *C. hasenpuschi* sp.nov. holotype; C. *C. markhanloni* sp.nov. holotype; D. *C. mimesis* sp.nov. holotype; E. *C. anthrene* sp.nov. holotype.

although those of *C. markhanloni* are narrow and the apophysis of the basal piece is more tapered (Fig. 1G). Named after Mr T. M. S. Hanlon of Sydney.

Castiarina mimesis sp. nov.
FIGS 1F, 6D

Holotype. ♂, Badjalling, W.A., 7.xi.1970, S. Barker, SAMA I21,253.

Allotype. ♀, same data as holotype, SAMA I21,254.

Paratypes. W.A.: 15♂♂, 5♀♀, same data as holotype SAMA; 2♀♀, South Tammin Flora Reserve, 8.xi.1970, S. Barker, SAMA; 1♂, 70 km S Perth, Albany Highway, 19.xi.1970, S. Barker, SAMA; 2♂♂, 5♀♀, Northam, C. G. Jessup, SAMA; 4♀♀, no data SAMA; 1♀, 34 km N Gin Gin, 11.xi.1990, M. Powell, MPWA.

Colour. Head, antennae, pronotum bright green. Scutellum blue-green. Elytra orange with following blue markings: narrow basal margin; vitta on each elytron from humeral callus to pre-apex; line along suture meeting vittae at pre-apex. In some specimens vittae shortened at basal end leaving narrow mark over each humeral callus. Ventral surface and legs bright green. Hairs silver.

Shape and sculpture. Head closely punctured, medium sulcus, muzzle short. Antennae, antennomeres: 1-3 obconic; 4½ toothed; 5-11 toothed. Pronotum closely punctured, basal fovea extending forwards to apical margin as impressed line; apical margin projecting medially, basal margin almost straight; laterally parallel-sided from base, rounded post-medially to apex. Scutellum scutiform, glabrous, excavate. Elytra punctate-striate, intervals convex, heavily punctured; laterally angled outwards from base, rounded at humeral callus, medially concave, rounded post-medially and tapered to bispinose apex; very small marginal and sutural spines, margin rounded and indented between spines, apices hardly diverging. Ventral surface with shallow punctures, hairy, hairs long, edges of abdominal segments glabrous. S7: truncate both sexes.

Size. Males, 8.9 ± 0.19 × 2.8 ± 0.07 mm (19). Females, 8.9 ± 0.21 × 2.9 ± 0.08 mm (18).

Male genitalia. Parameres angled outwards from basal piece, rounded post-medially then increasing in width, notched apically. Median lobe blunt, sides acutely angled away. Apophysis of basal piece broad, rounded apically.

Remarks. This species was confused with *C. sanguinolenta* (C & G). Their elytral colour and markings are very similar but male genitalia are very different (Fig. 1E) and they are easily distinguished by differences in structure of their elytral spines. In *C. sanguinolenta* these are sharp and equal, in *C. mimesis* they are small and sutural spines are indented. They occur together and are part of a Muellerian mimicry complex. The name is derived from *mimesis* L., imitation.

Castiarina tenebrosa sp. nov.
FIGS 1K, 5C

Holotype. ♂, 4 km W Paluma, Qld, 7.i.1986, E. E. Adams, SAMA I 21,255.

Allotype. ♀, 4 km W Paluma, Qld, 4.i.1986, A. Sundholm, SAMA I 21,256.

Paratypes. Qld: 2♀♀, same data as holotype, ANIC; 1♂, 1♀, same data as allotype, ASSA; 2, ♂♂, 4 km W Paluma, 6/7.i.1986, A. Sundholm, ASSA.

Colour. Head, antennae and pronotum black with green reflections. Scutellum green. Elytra yellow with black markings coalesced forming basal, pre-medial and sub-apical spots, first two coalesced to form vitta also spot on humeral callus covering margin. Ventral surface green with yellow reflections. Legs dark blue. Hairs silver.

Shape and sculpture. Head shallowly punctured, broad median sulcus, short muzzle. Antennae, antennomeres: 1-3 obconic; 4½-toothed; 5-11 toothed. Pronotum shallowly punctured, small basal fovea; apical margin straight, basal margin bisinuate; laterally parallel-sided

at base, rounded to widest pre-medially, narrowed to apex. Scutellum cordiform, glabrous, flat. Elytra punctate-striate, intervals convex, punctured; laterally angled outwards from base, rounded at humeral callus, medially concave, rounded post-medially and narrowed to bispinose apex; sharp marginal spine, small, sharp sutural spine, margin straight between spines, apices diverging. Ventral surface with shallow punctures, moderately hairy, hairs medium length, edges of abdominal segments glabrous. S7: rounded in both sexes.

Size. Males, 11.9 ± 0.12 × 4.2 ± 0.06 mm (6). Females, 11.6 × 4.4 mm (2)

Male genitalia. (Fig. 1K) Parameres angled outwards from basal piece, rounded post-medially, parallel-sided, rounded to apex. Median lobe sharp, sides obtusely angled away. Basal piece wide, rounded apically.

Remarks. This species was confused with *C. guttifera* (Obenberger) which has only been collected at Kuranda, Qld. The male genitalia differ (Fig. 1J) Name derived from *tenebrosus* L., dark.

Castiarina hasenpuschi sp. nov.
FIGS 1L, 6B

Holotype. ♂, Mt Lewis, Qld, 6.i.1991, J. Hasenpusch, SAMA I 21,257.

Allotype. ♀, same data as holotype, SAMA I 21,258.

Paratypes. Qld: 1♂, 2♀♀, same data as holotype, JHIQ.

Colour. Head black with blue reflections. Antennae black with blue-green reflections. Pronotum black with purple reflections. Scutellum blue. Elytra yellow with following black markings: two fasciae and apical mark coalesced leaving a pre-medial, post-medial and pre-apical yellow spot on each elytron and one on margin at humeral callus. Ventral surface green. Legs blue. Hairs silver.

Shape and sculpture. Head closely punctured, median sulcus, short muzzle. Antennae, antennomeres: 1-4 obconic; 5-11 toothed. Pronotum closely punctured, narrow basal fovea; apical margin projecting medially, basal margin bisinuate; laterally rounded from base, widest pre-medially, rounded and narrowed to apex. Scutellum cordiform, punctured, flat. Elytra punctate-striate, intervals convex, punctured; laterally angled out from base, rounded at humeral callus, medially concave, rounded post-medially and narrowed to bispinose apex; sharp marginal spine, small, sharp sutural spine, margin straight between spines, apices diverging. Ventral surface with shallow punctures, moderately hairy, hairs short, edges of abdominal segments glabrous.

Males: legs 2 and 3 with reduced pulvilli on tarsomeres 1-3, replaced with single median spine. S7: male truncate, indented medially; female truncate, slightly indented medially.

Size. Males, 9.8 × 3.8 mm (2). Females, 10.4 × 4.0 mm (3).

Male genitalia. (Fig. 1L). Parameres short and wedge-shaped. Median lobe sharp, sides obtusely angled away. Apophysis of basal piece medium width, rounded apically.

Remarks. Structurally this species closest to members of *C. sexplagiata* group except that elytra are smooth whereas they are roughened with punctures in most members of group. Named after Mr J. Hasenpusch, Innisfail.

Castiarina luteofusca sp. nov.
FIGS 1M, 5A

Holotype ♂, Mt Lewis, Qld, 1.i.1992, G. A. Wood, SAMA I 21,259.

Allotype. ♀, Mt Lewis, Qld, 6.i.1992, G. A. Wood, SAMA I 21,260.

Paratype, 1♂, Qld: N.Q., F. P. Dodd, ANIC.

Colour. Head green. Antennae, antennomeres: 1-4 green; 5-11 blue-green. Pronotum: bronze medially; green apically. Scutellum green. Elytra yellow with black markings coalesced leaving yellow basal and medial spots on each elytron, these coalesced forming angled vitta, round yellow apical spot and yellow mark on lateral surface of humeral callus. Ventral surface green. Legs dark blue. Hairs silver.

Shape and sculpture. Head shallowly punctured, broad median sulcus, short muzzle. Antennae, antennomeres: 1-3 obconic; 4-11 toothed. Pronotum shallowly punctured, small basal fovea; apical margin projecting medially, basal margin bisinuate; laterally parallel-sided at base, angled inwards, rounded to apex, widest pre-medially. Scutellum scutiform, glabrous, flat. Elytra punctate-striate, intervals convex, punctured; laterally angled outwards from base, rounded at humeral callus, medially concave, rounded post-medially and tapered to bispinose apex; sharp marginal spine, smaller sharp sutural spine, margin rounded between spines. Ventral surface with shallow punctures, few short hairs, edges of abdominal segments glabrous. S7: truncate in both sexes.

Size. Male, 12.4 × 4.7 mm (1). Females, 12.7 × 4.8 mm (2).

Male genitalia (Fig. 1M). Parameres angled outwards from basal piece, rounded to apex. Median lobe pointed, sides acutely angled away. Apophysis of basal piece medium width, rounded apically.

Remarks. Largest of black and yellow *C. producta* (Saunders) group mimics and with *C. tenebrosa* and following new species, only ones that have yellow vittae on elytra. Name derived from *luteus* L., yellow and *fuscus* L., black.

Castiarina woodi sp. nov.
FIGS 1N, 5B

Holotype. ♂, Mt Lewis, Qld, 1.i.1992, G. A. Wood, SAMA I 21,261

Allotype. ♀, same data as holotype. SAMA 21,262.
Colour. Head and antennae blue-green. Pronotum green with bronze reflections. Scutellum blue-green. Elytra yellow with following dark green marks: markings coalesced to form yellow basal and medial spots also coalesced forming long vitta covering humeral callus and margin; large round pre-apical spot. Ventral surface green. Legs blue-green. Hairs silver.
Shape and sculpture. Head shallowly punctured, broad median sulcus, short muzzle. Antennae, antennomeres: 1-3 obconic; 4-11 toothed. Pronotum shallowly punctured, deep basal fovea; apical margin projecting medially, basal margin bisinuate; laterally parallel-sided at base, rounded to apex, widest pre-medially. Scutellum scutiform, glabrous, flat. Elytra punctate-striate, intervals convex, punctured; laterally angled outwards from base, rounded at humeral callus, medially concave, rounded post-medially to unispinose apex; sharp marginal spine, sutural spine represented by very small notch, margin straight between spine and notch, apices diverging. Ventral surface with shallow punctures, moderately hairy, hairs long and denser in medial strip, edges of abdominal segments glabrous. S7: truncate in both sexes.
Size. Male, 11.6 × 4.5 mm (1). Female, 11.9 × 4.5 mm (1).
Male genitalia. (Fig. 1N) Parameres more or less parallel-sided from basal piece, rounded to apex. Median lobe pointed, sides obtusely angled away. Apophysis of basal piece short, narrowed and rounded to apex.
Remarks. Elytral markings of this species are similar to those of *C. luteofusca* but distinctive male genitalia and elytral spines distinguish this species. Named after Mr G. A. Wood, Atherton.

Castiarina nebula sp. nov.
FIGS 1O, 6A

Holotype. ♂, Mt Lewis, Qld, 6.i.1991, J. Hasenpusch, SAMA I 21,263
Allotype. ♀, same data as holotype, SA MA I 21,264.
Paratypes. Qld: 2♂♂, Kuranda, 1.ii.1990, 5.ii.1990, G. A. Wood, GWAQ; 1♀, Kuranda, Qld, 2.i.1978, A. & M. Walford-Huggins, SAMA; 2♀♀, Kuranda, 5.ii.1990, J. Hasenpusch, JHIQ; 1♂, Kuranda, 1.ii.1990, G. Wood, GWAQ.
Colour. Head and antennae green. Pronotum black with blue or green reflections. Scutellum green. Elytra yellow with following black markings: fasciae and marks coalesced leaving six yellow spots, largest pre-medial, smallest post-medial and intermedial on margin at humeral callus. Ventral surface green. Legs blue. Hairs silver.
Shape and sculpture. Head shallowly punctured, median sulcus, medium length muzzle. Antennae, antennomeres: 1-3 obconic; 4½-toothed; 5-11 toothed. Pronotum shallowly punctured, very small basal fovea; apical margin straight, basal margin bisinuate; laterally angled inwards from base, then rounded from near base to apex, widest pre-medially. Scutellum scutiform, few punctures, glabrous, flat. Elytra punctate-striate, intervals convex, smooth; laterally angled outwards from base, rounded at humeral callus, medially concave, rounded post-medially and tapered to bispinose apex; sharp marginal spine, small sharp sutural spine, margin rounded and indented between spines, apices diverging. Ventral surface with shallow punctures, few short hairs, abdominal segments glabrous. S7: truncate both sexes. Males: legs 2 and 3 with each pulvillus on tarsomeres 1-3 replaced by median spine.
Size. Males, 10.9 × 3.8 mm (3). Females, 11.8 × 4.2 mm (4).
Male genitalia (Fig. 1O). Parameres widened from base, rounded at apex. Median lobe sharp, sides obtusely angled away. Apophysis of basal piece medium width, rounded at apex.
Remarks. Elytral markings of this species are similar to those of *C. octosignata* (Carter, 1919). However *C. octosignata* differs stucturally as elytral spines are different shape. Male *C. octosignata* unknown. Name derived from *nebulosus* L., dark.

Themognatha gordonburnsi sp. nov.
FIGS 1U, 7

Holotype, ♂, 69 km N Galena Bridge, W.A., 29.ix.1992, M. Golding & M. Powell, WAMA.
Allotype, ♀, 100 km N Murchison River, W.A., 14.ix.1980, G. G. Burns, NMVA.
Paratypes. W.A.: 2♀♀, same data as allotype, 14.ix.1980, 17.ix.1980, G. G. Burns, NMVA; 9♂♂, same data as holotype, SAMA & MPWA.
Colour. Head and antennae black. Pronotum black with yellow lateral margins. Scutellum black. Elytra predominantly brown with yellow lateral margins and following black markings: narrow basal margin; females with faint pre-apical vitta over each humeral callus and faint markings on suture, post-medial fascia not reaching margin; spade-shaped pre-apical mark extending over apex. Ventral surface: male predominantly black pre-sternum with yellow mark on meta-sternal coxae; abdominal sclerites yellow with testaceous edges; female black with yellow mark on meta-sternal coxae and on lateral edges of all visible abdominal segments. Legs black. Hairs silver.
Shape and sculpture. Head punctured, hairy, apex medium length. Antennae, antennomeres: 1-3 obconic, 4 semi-toothed; 5-11 toothed. Pronotum punctured, apical margin projecting medially, basal margin faintly sinuous, laterally rounded from base to apex, bulbous pre-medially. Scutellum almost circular, flat, without punctures. Elytra punctate-striate, intervals convex and

Fig. 7. Habitus illustration of *Themognatha gordonburnsi* sp.nov. allotype.

smooth; laterally angled outwards from base, rounded at humeral callus, medially more or less parallel-sided, rounded post-medially to spineless apex. Ventral surface punctured, hairy. S7: truncate, medially indented in male; rounded in female.

Male genitalia. (Fig. 1U). Parameres angled outwards from basal piece, rounded at apex. Median lobe blunt, sides acutely angled away. Apophysis of basal piece medium width, rounded apically.

Size. Males, 20.6 ± 0.35 × 8.4 ± 0.13 mm (10). Females, 24.3 × 9.6 mm (3).

Remarks. Although the locality data on the holotype and allotype appear different they refer to the same area. The allotype has a narrow median yellow band on the pronotum, not reaching base or apical margin. *T. burnsi* is a spring emerging species, adults have been collected on the flowers of *Grevillea* sp. and *Bursaria spinosa*. On the basis of its structure and male genitalia, it can be grouped with *T. oleata* (Blackburn) a blue and red species which emerges in late summer and autumn and is usually associated with mallee flowers. The specimen illustrated is the allotype (Fig. 7), the first specimen collected. Named to commemorate my friend and colleague the late Mr Gordon Burns, Mornington.

A host plant of C. uptoni *(Barker)*

Although the adults of many *Castiarina* species are commonly collected, the pre-adult stages and host plants of even the commonest species are mostly unknown. *Castiarina uptoni* (Barker, 1979) was described from dead adults found inside tubular highway marker posts, north of Barrow Creek, N.T. Presumably they had been dropped into the cavities by predaceous insects that had been feeding on them, possibly asilid flies which commonly prey on buprestids (Barker & Inns 1976). Live specimens were subsequently collected in the same general area but their food plants were not recorded. Several years ago Herbert Demarz collected live specimens of *C. uptoni* on the leaves of *Dicrastylis georgei* Munir, a very low shrub growing in an interdune situation on Yanrey Station, 4-31 km south of Barradale roadhouse on the Great Northern Highway, W.A. On 10 August 1990, I visited the locality with Mr Demarz and we examined the same plants in that area, but found no adult beetles on the leaves. Many of the stems were dead and detached from the individual plants. Examination of the live part of each cut stem showed frass and when dissected, every one was found to be galleried and to contain a living beetle. Most were adult, but a proportion were newly pupated or in various stages of post-pupal metamorphosis. Of fourteen specimens dissected out, twelve were *C. uptoni* and two were *C. quadrifasciata* (Saunders, 1869). The two species belong to different species groups on basis of structure of their male genitalia, but are similar in body colour and pattern and thus form a Mullerian mimicry group. When I visited the same area on 20 August 1990, many *C. uptoni* adults were found on the leaves of the host plant as well as two specimens of *C. quadrifasciata*. As *D. georgei* does not occur in the N.T., beetles from the type locality must have another host plant which could be a second species of *Dicrastylis*, possibly *D. gilesii* F. Muell. which occurs in that area (Jessop 1981).

Acknowledgments

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